

CROWDSOURCING AND VIRTUAL REALITY APPLICATIONS FOR PEACEKEEPING: STUDY CASES IN MOGADISHU AND TRIPOLI

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*State of the Map 2022,
August 21st*



What we do

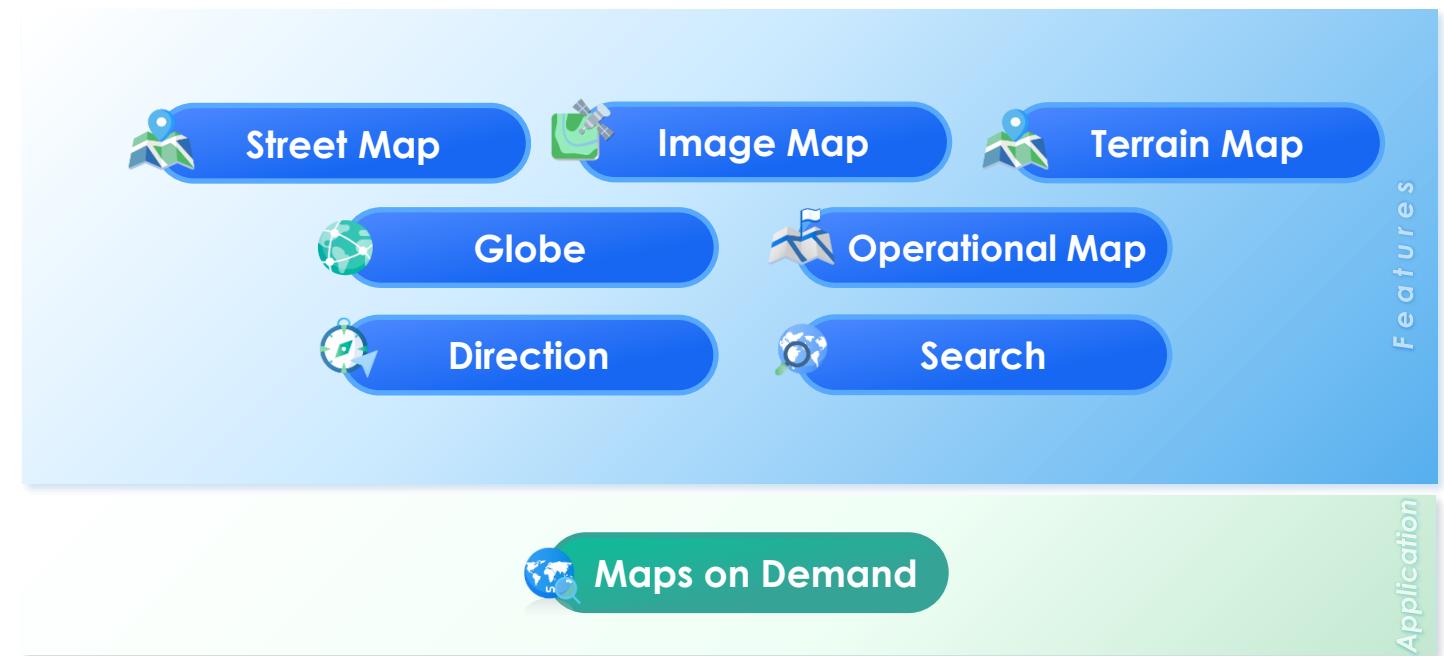
The logistics base and peacekeeping operations





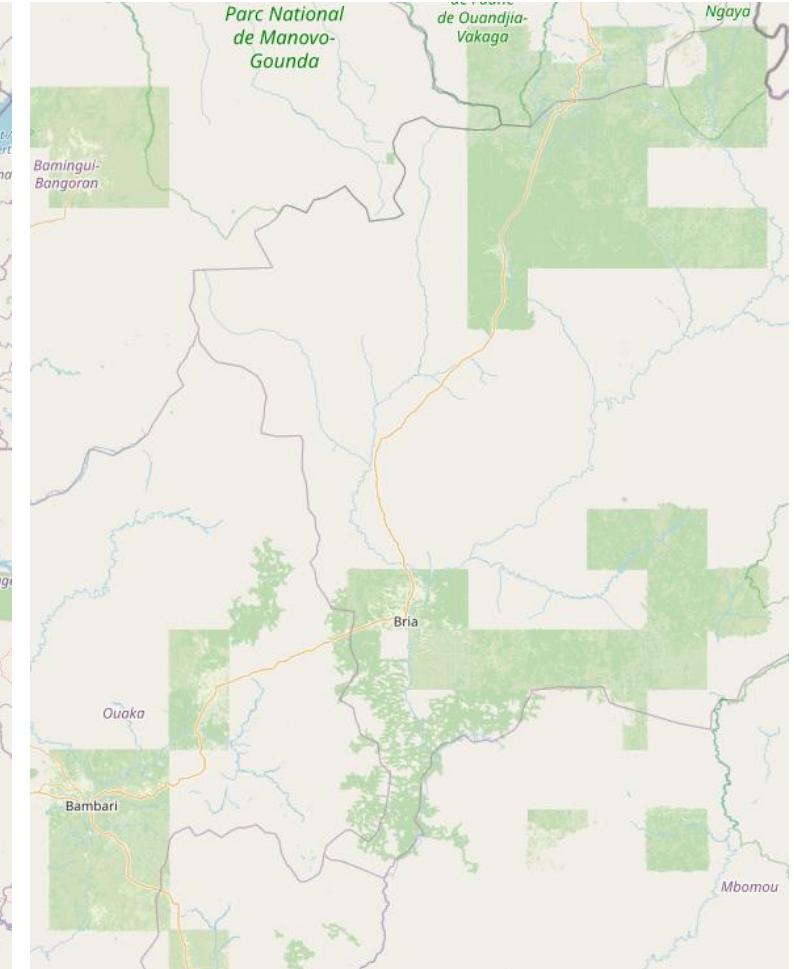
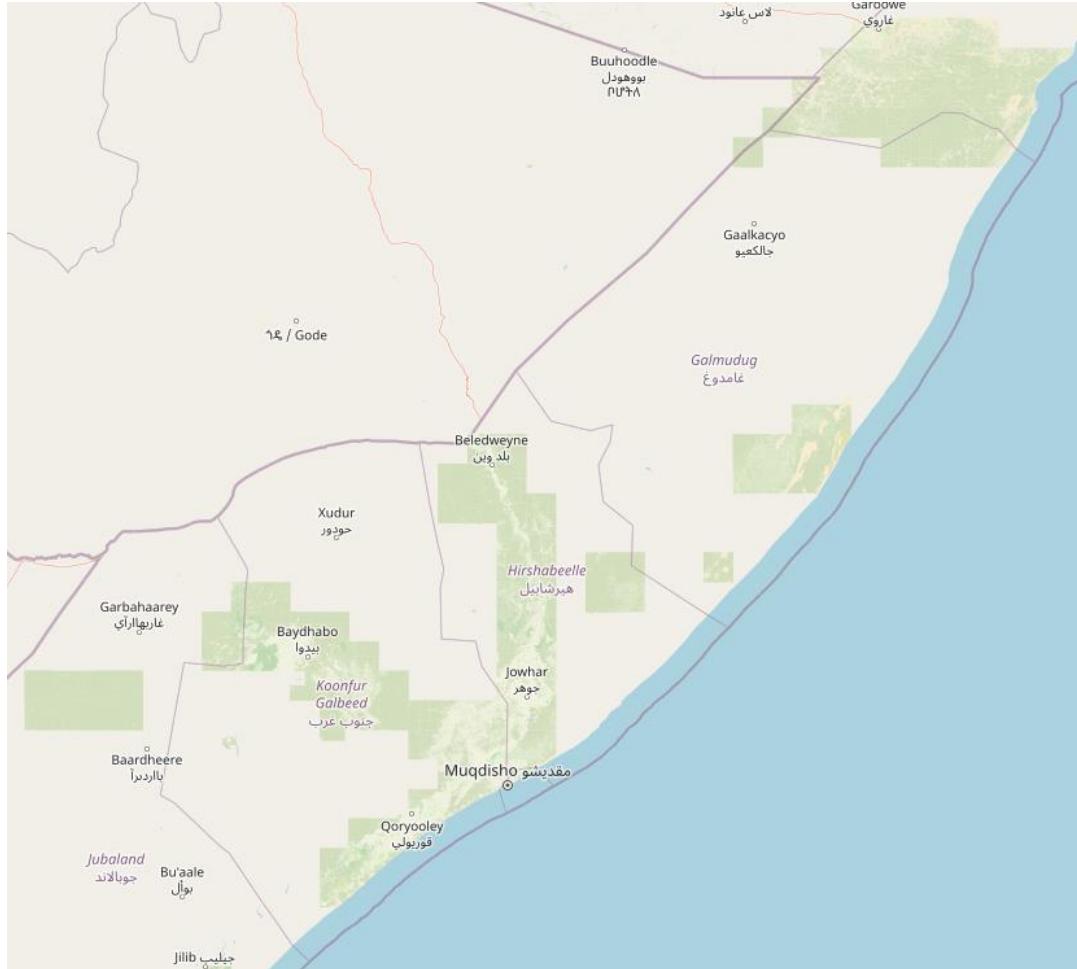
UN Maps

The 'Google Maps' of the UN



UN Maps

The 'Google Maps' of the UN

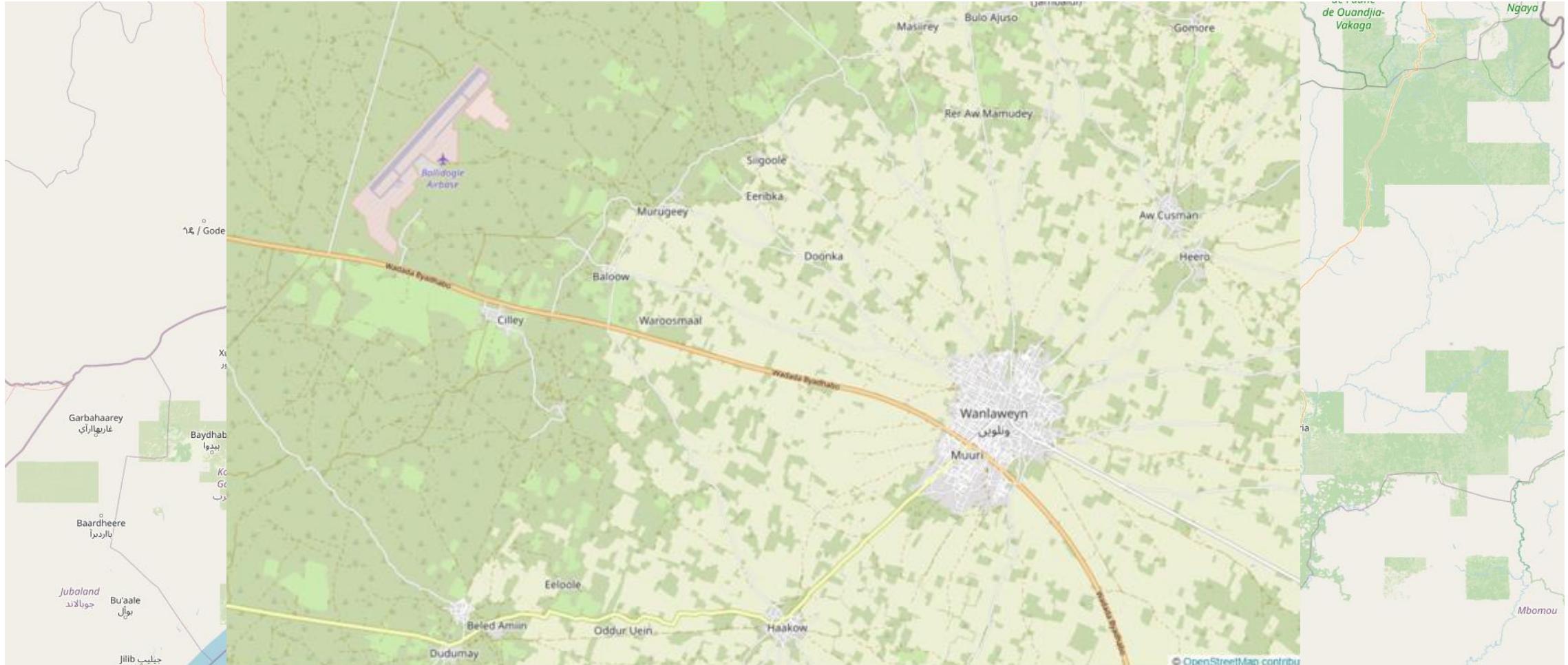


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Leveraging innovative technology

Virtual Reality (VR) applications and use cases

- Visualization around a shared simulated 3D view of an area of interest for strategic planning



Operational Efficiency

Develop specialist skill-sets to be deployed as strategic or mission-level resources in a cost-effective manner



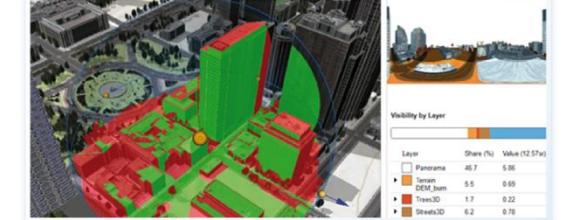
Collaboration

Enable multiple users to safely collaborate around a shared simulated sandbox, from separate remote locations



Safe training

Improve and ensure the delivery of training, especially in situations where safety and security are compromised



Expanded Planning Tools

Allow users to provide / create on-the-fly input to planning, to trigger and shape their simulations in a realistic virtual environment



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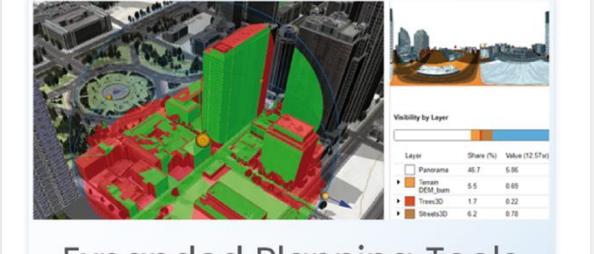
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Yet another building mapping project?

Yes, but...

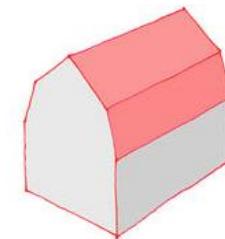
- Need for accurate information
 - Geometry and footprint
 - Building characteristics (height, levels, material, color, roof type)



Roof shape

You can characterize the roof of a building using a catalogue of well-known roof types.

Image						
roof:shape	flat	skillion	gabled	half-hipped	hipped	pyramidal
Image						
roof:shape	gambrel	mansard	dome	onion	round	saltbox



Description

Roof shape type.

Group: Buildings

Used on these elements



Requires

- `building=* or`
`building:part=*`

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Yet another building mapping project?

Yes, but...

- Urban environment
 - Buildings are close to each other
 - Azimut for tall buildings
 - Comparison of imageries, offset correction



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Yet another building mapping project?

Yes, but...

- Security issues
 - Cannot fly drones. Often, cannot take pictures
 - Security concerns with civilians
 - Security policies

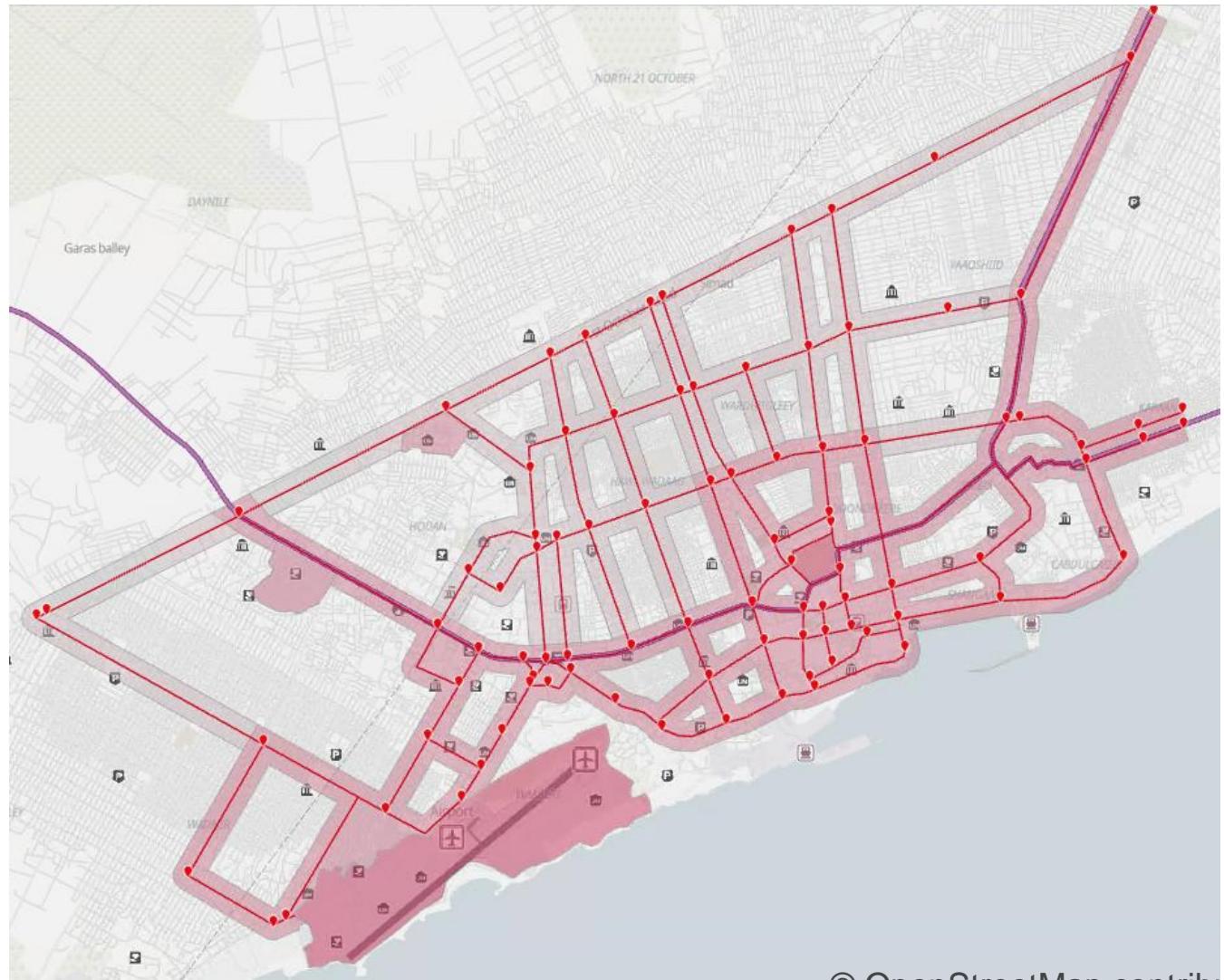


Mogadishu

Setting



1. Contacts with local community
2. Definition areas of interest with clients
3. Production of instructions
4. Crowdsourcing and validation



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UN Mappers community

Volunteers supporting peace and serving humanity



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Mogadishu

Over 50k buildings in few weeks



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Tripoli: OSM Libya as a key partner

Their contributions to Kartaview

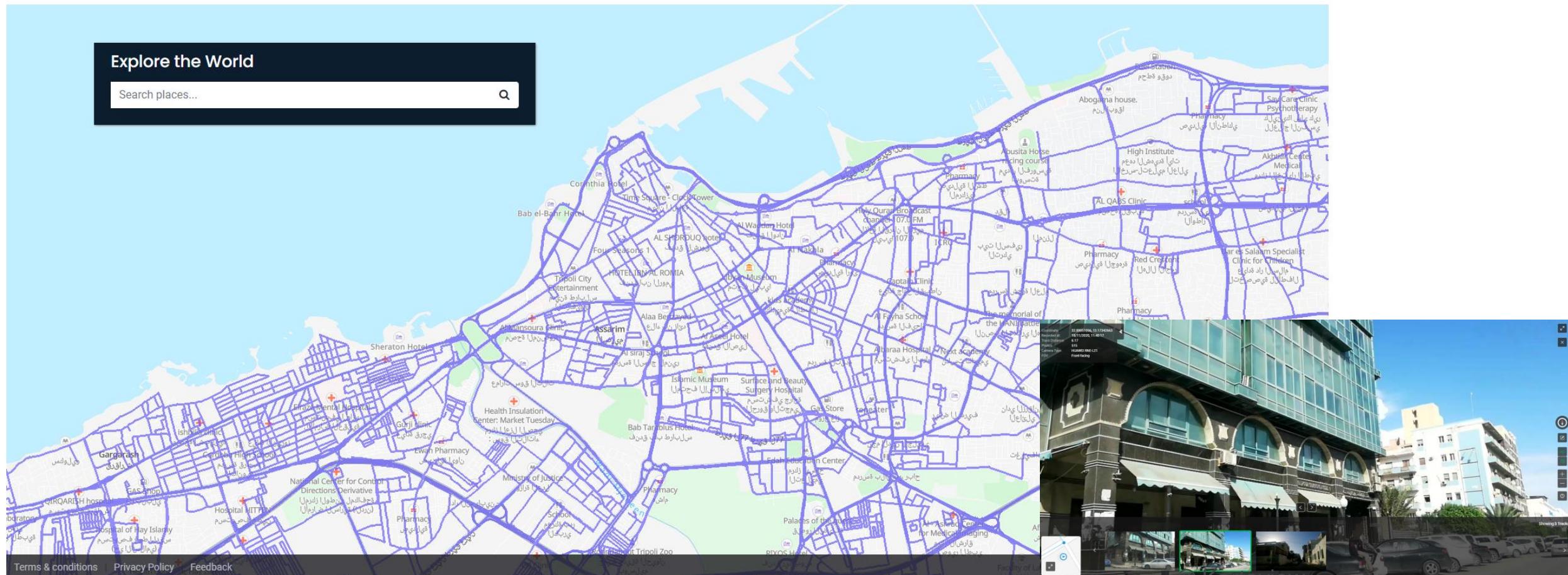
KartaView

Leaderboard Blog

Sign In

Explore the World

Search places...



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Tripoli: BuildingComplete

Tweaking of open-source Android applications



Building Type

School, apartment, house, mosque...



Building Level



Roof Shape

Flat, gabled, round...



Building Material

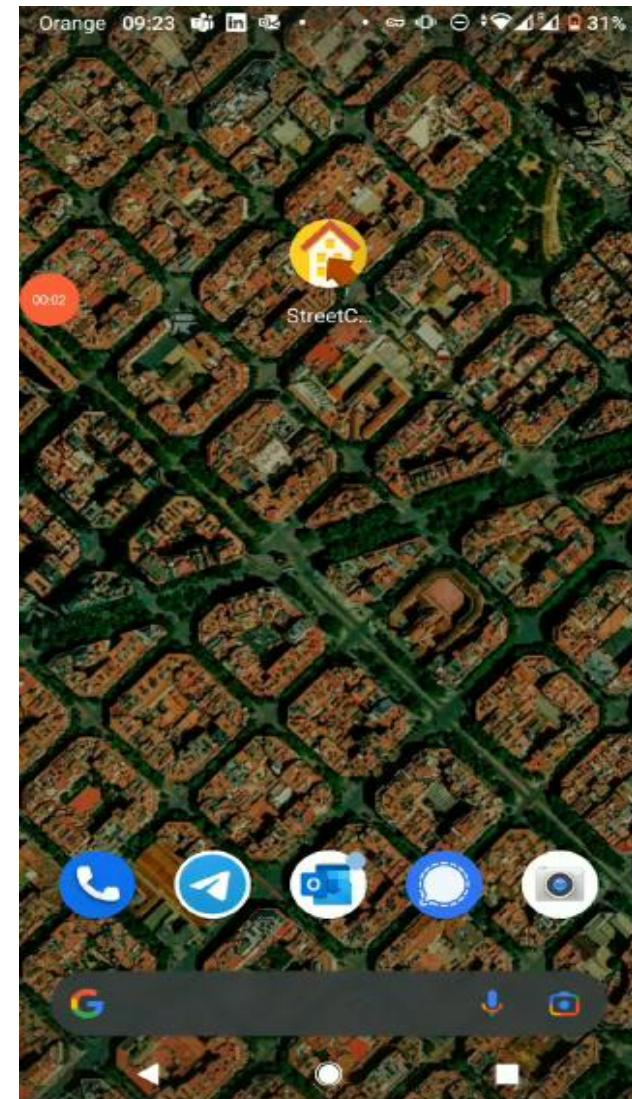
Cement blocks, bricks, concrete...



Building Colour

White, grey, beige, blue...

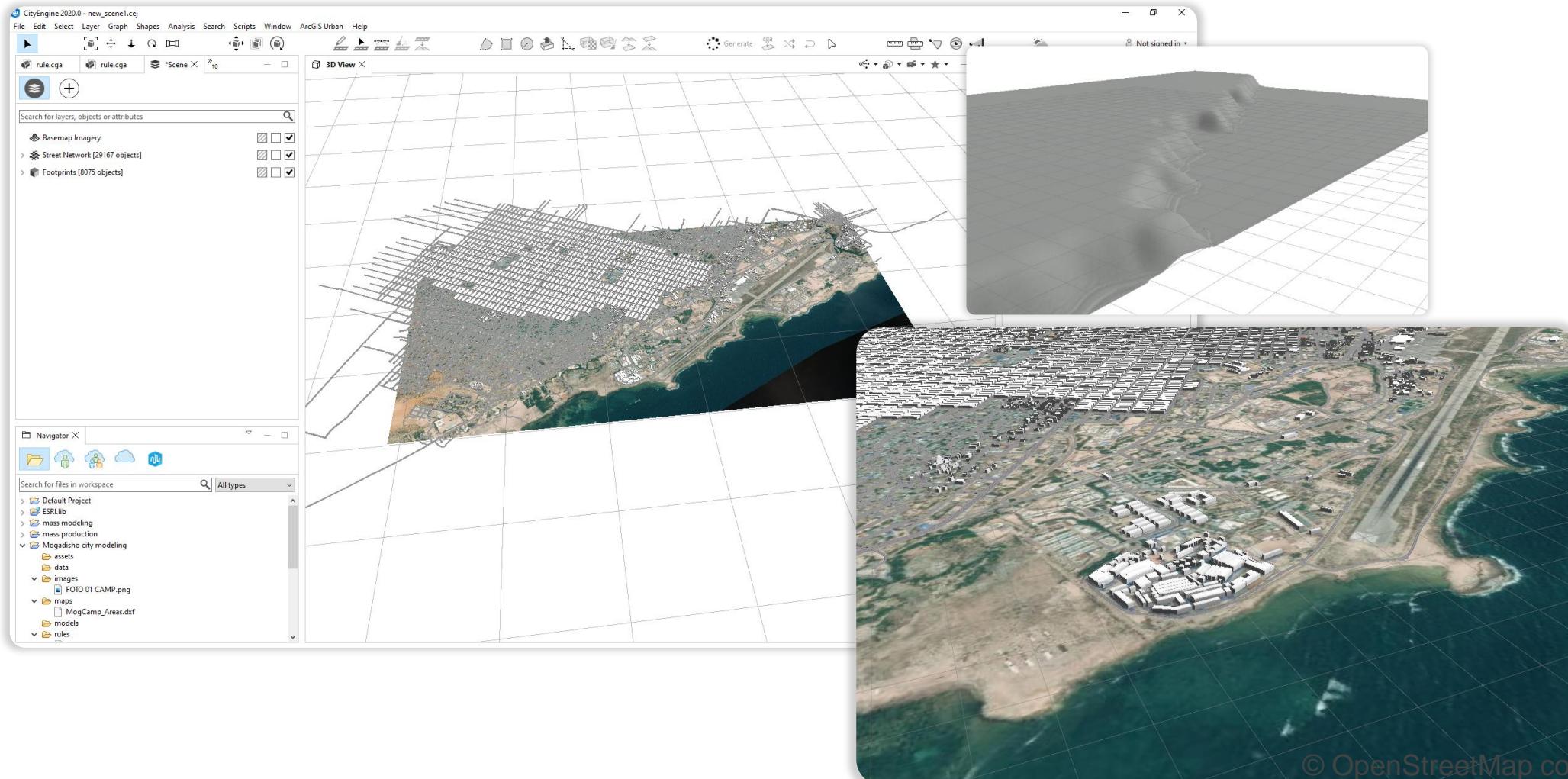
- And translations in Arabic



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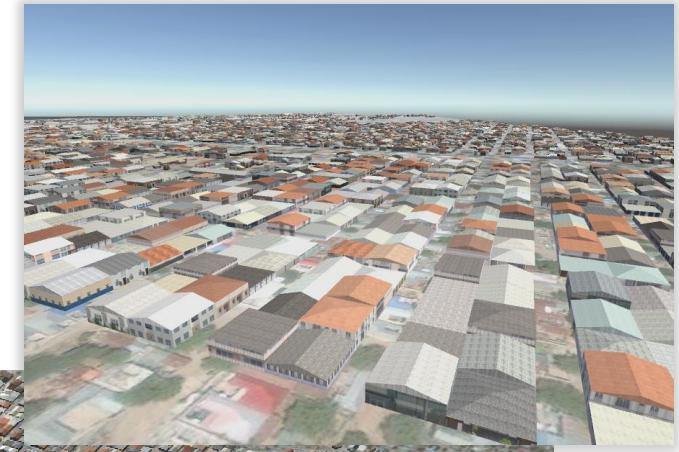
3D modeling

Data ingestion and modeling of buildings



3D modeling

Procedural modeling



3D modeling

Texturing and enhancements



In conclusion

Before the demo...

- Challenges:
 - Field mapping is dangerous and doesn't scale well. Could be useful for groundtruth
 - Many geospatial tools are denied
 - Coordination between IT-only and GIS teams
- Next steps
 - Perform large scale estimation of building heights
 - Perform small scale field mapping of building details
 - Train peacekeepers to edit field information
 - Explore further usage of street-level imagery



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